Summary of Survey 2 Results

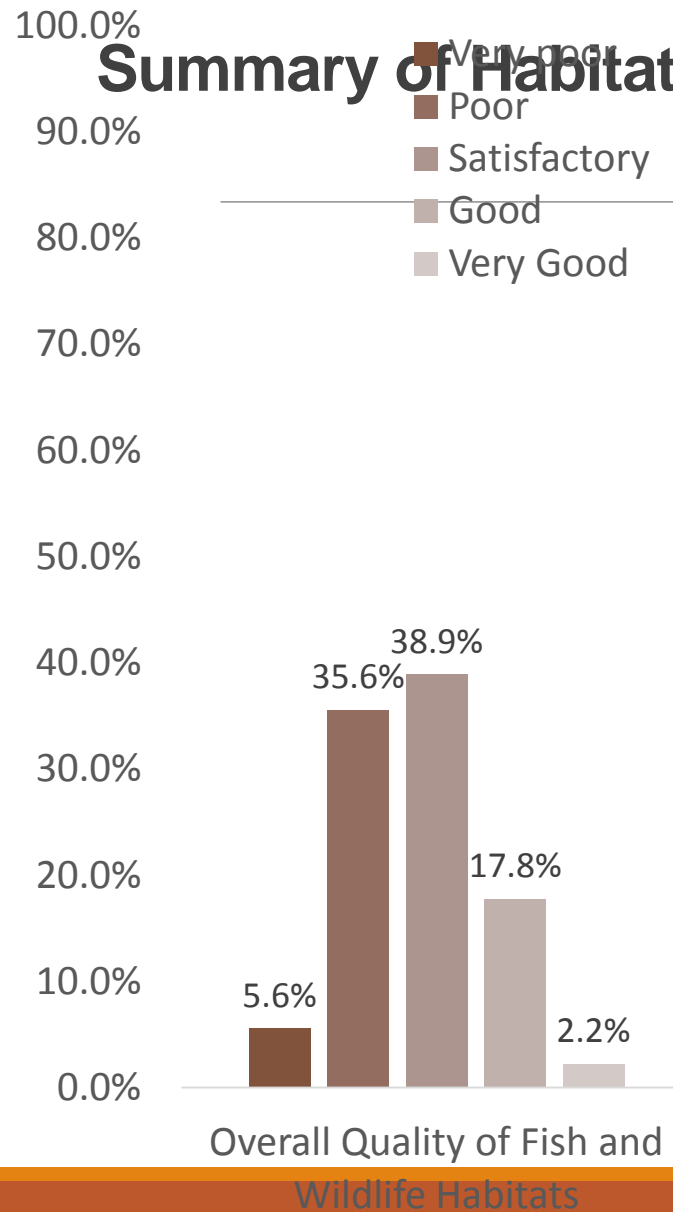VALLEYS AND HILLS (REGION 4)

Overview/Purpose of Survey 2

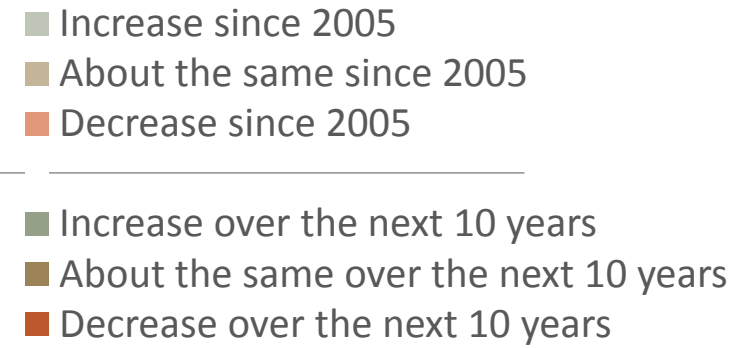Talk about threats and actions, habitat perspective, who it went out to

For which of the following SWAP planning regions do you consider yourself knowledgeable to provide information on the status of, threats to, and relevant conservation actions for fish and wildlife habitats?

Valleys and Hills (Region 4) – 21.1% (61)

Habitat type:	Proportion of respondents:	N:
Aquatic systems	42.4%	(25)
Agricultural lands	40.7%	(24)
Barren lands	13.6%	(8)
Developed Lands	15.3%	(9)
Forests	62.7%	(37)
Grasslands	40.7%	(24)
Subterranean systems	N/A	N/A
Wetlands	57.6%	(34)

Summary of Habitat

gion 4)

Legend (left):
- Very Poor
- Poor
- Satisfactory
- Good
- Very Good

Legend (right):
- Increase since 2005
- About the same since 2005
- Decrease since 2005
- Increase over the next 10 years
- About the same over the next 10 years
- Decrease over the next 10 years

Chart values:
- 5.6%
- 35.6%
- 38.9%
- 17.8%
- 2.2%

Y-axis: 0.0%, 10.0%, 20.0%, 30.0%, 40.0%, 50.0%, 60.0%, 70.0%, 80.0%, 90.0%, 100.0%

Overall Quality of Fish and Wildlife Habitats

11. How would you describe the **overall quality** of fish and wildlife habitats within **HABITAT** in the Valleys and Hills (Region 4)?
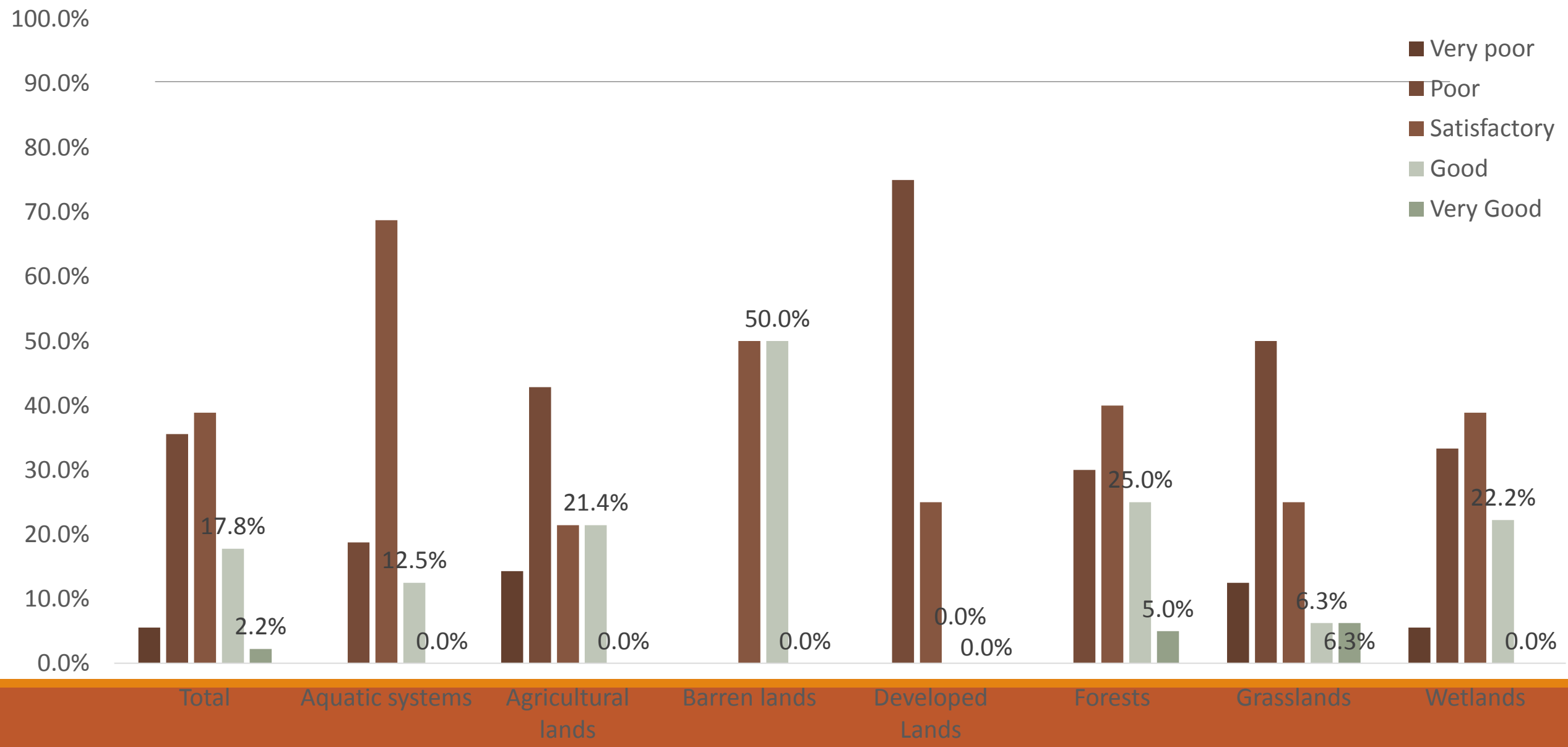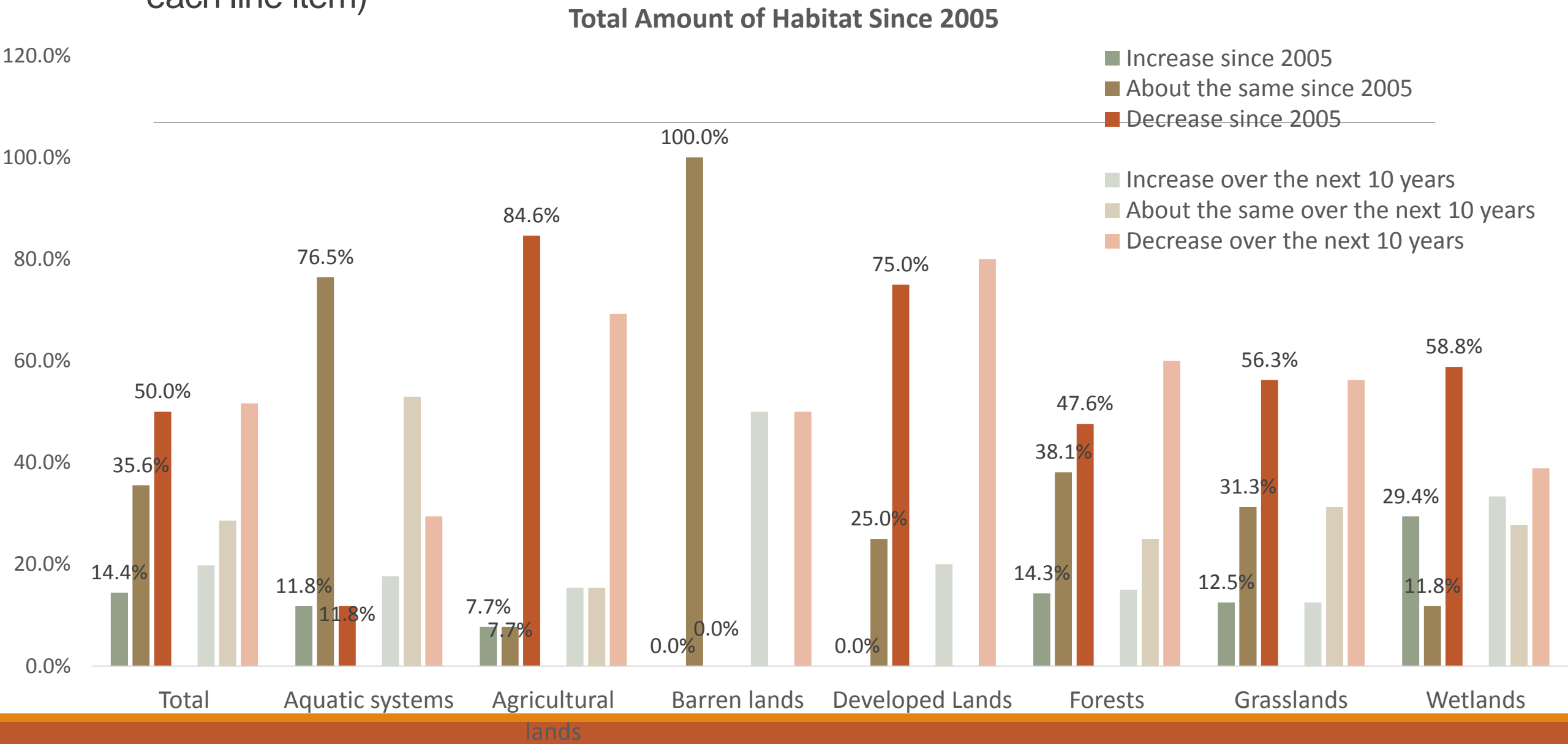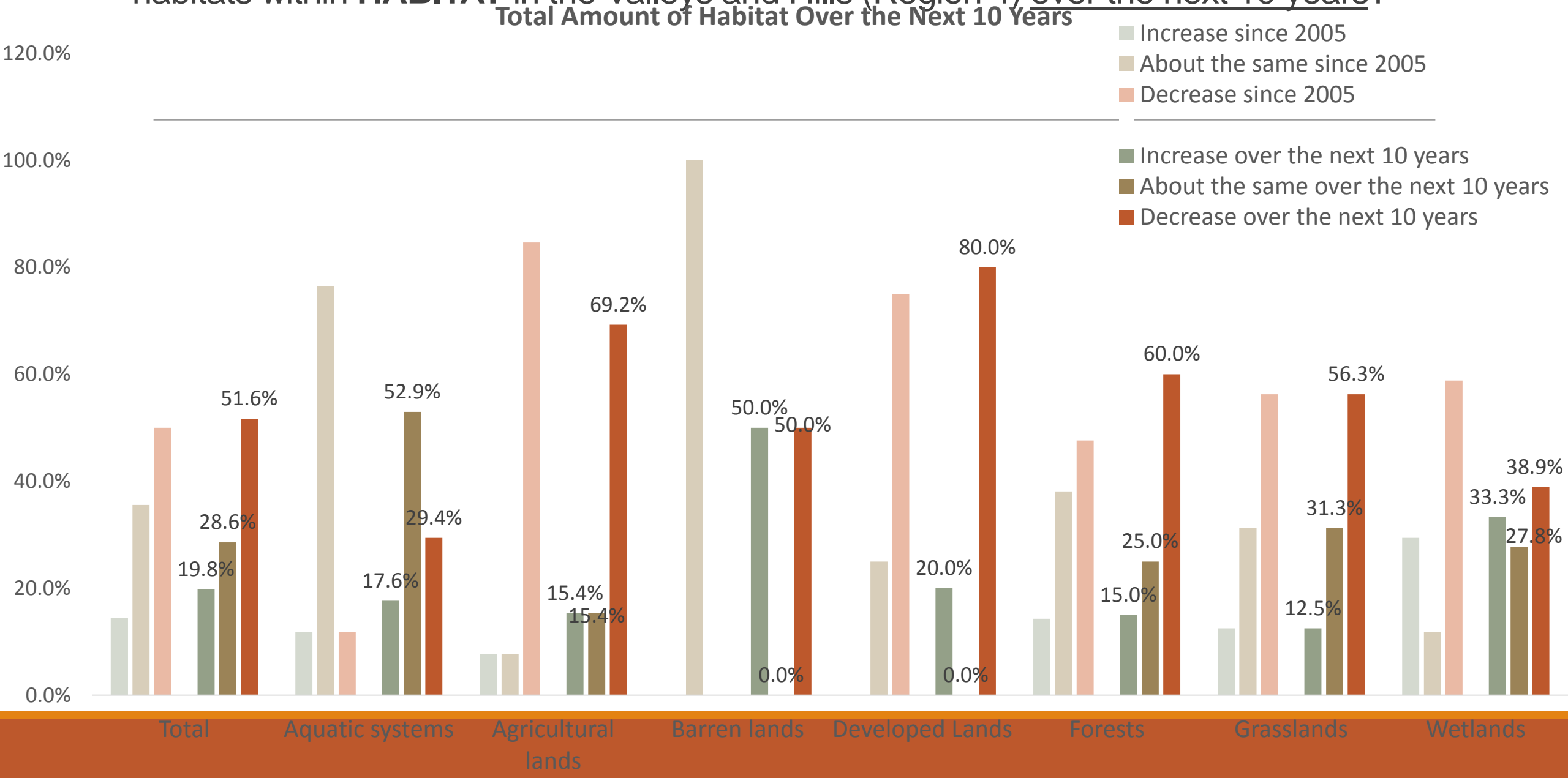
Overall Quality of Fish and Wildlife Habitats

11. How would you describe the **overall quality** of fish and wildlife habitats within **HABITAT** in the Valleys and Hills (Region 4)?

Overall Quality of Fish and Wildlife Habitats

12. How would you describe the total amount and overall quality of fish and wildlife habitats within **HABITAT** in the Valleys and Hills (Region 4) <u>since 2005</u>? (Check one for each line item)

Total Amount of Habitat Since 2005

Legend:
- Increase since 2005
- About the same since 2005
- Decrease since 2005
- Increase over the next 10 years
- About the same over the next 10 years
- Decrease over the next 10 years

Categories: Total, Aquatic systems, Agricultural lands, Barren lands, Developed Lands, Forests, Grasslands, Wetlands

Data labels visible:
- Total: 14.4%, 35.6%, 50.0%
- Aquatic systems: 11.8%, 76.5%, 11.8%
- Agricultural: 7.7%, 7.7%, 84.6%
- Barren lands: 0.0%, 100.0%, 0.0%
- Developed Lands: 0.0%, 25.0%, 75.0%
- Forests: 14.3%, 38.1%, 47.6%
- Grasslands: 12.5%, 31.3%, 56.3%
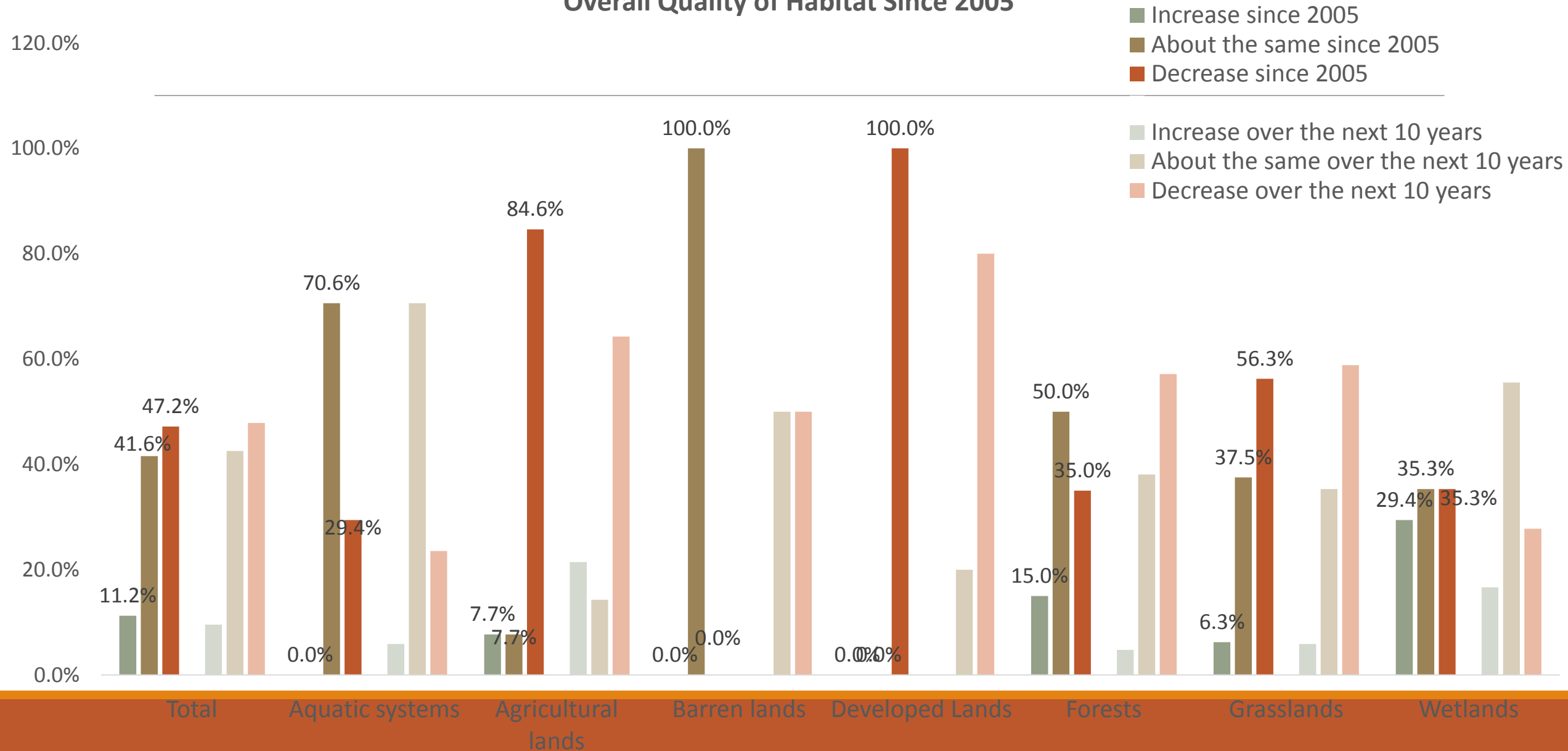- Wetlands: 29.4%, 11.8%, 58.8%

13. How would you predict about the total amount and overall quality of fish and wildlife habitats within **HABITAT** in the Valleys and Hills (Region 4) <u>over the next 10 years</u>?

Total Amount of Habitat Over the Next 10 Years

12. How would you describe the total amount and overall quality of fish and wildlife habitats within **HABITAT** in the Valleys and Hills (Region 4) <u>since 2005</u>? (Check one for each line item)

13. How would you predict about the total amount and overall quality of fish and wildlife habitats within **HABITAT** in the Valleys and Hills (Region 4) <u>over the next 10 years?</u>
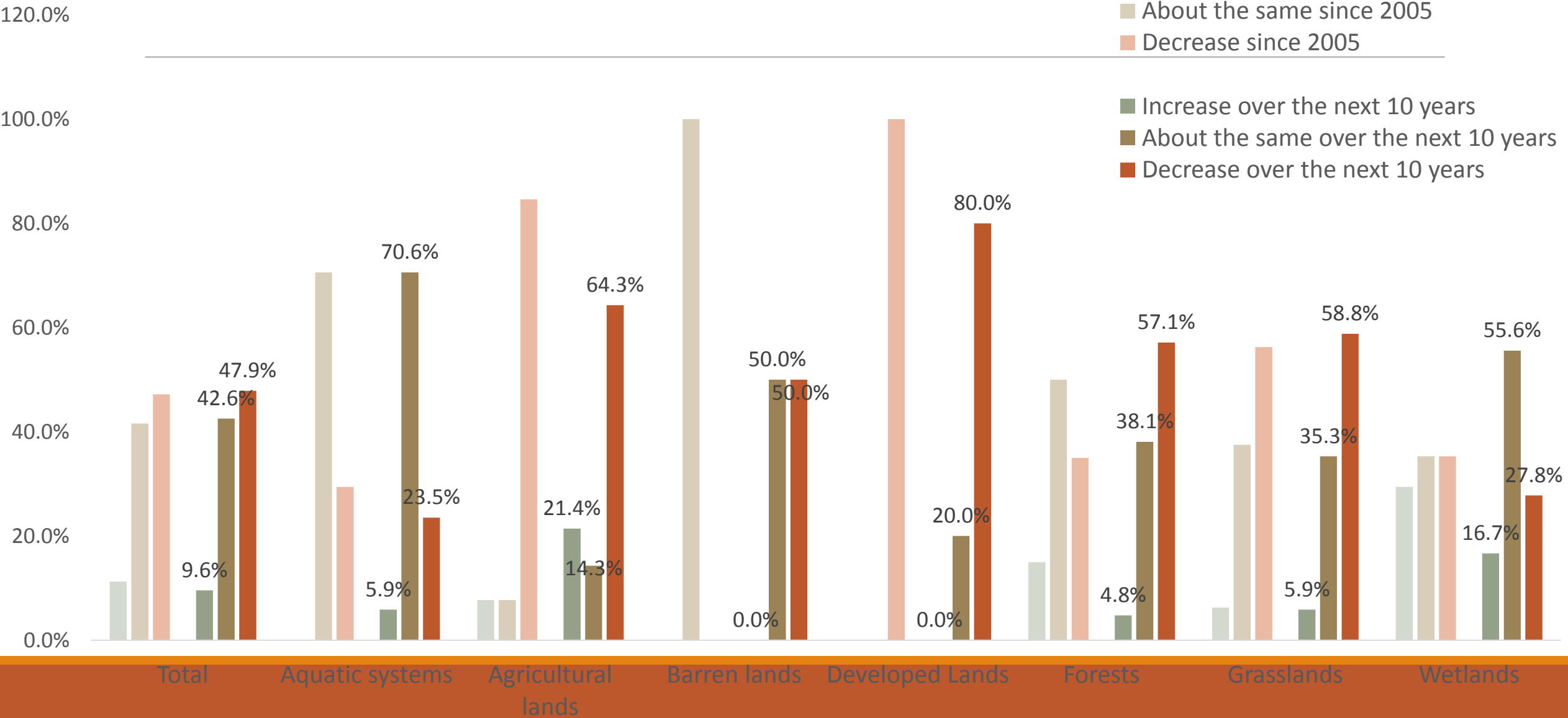
Threats to Habitats in Valleys and Hills (Region 4)

14. Currently, to what extent do you think the following general categories of threats **apply** to fish and wildlife habitats within **HABITAT** in the Valleys and Hills (Region 4)?

Threat Category:	Rating as "significant" or "moderate" threat:
Agriculture and aquaculture	94.4% (84)
Invasives and other problematic species and genes	75.6% (68)
Residential and commercial development	70.0% (63)
Energy production and mining	68.9% (62)
Human intrusion and disturbance	63.1% (53)
Pollution	61.4% (54)
Natural systems modifications	59.8% (52)
Transportation and service corridors	41.9% (36)
Climate change and severe weather	35.0% (28)
Other stressors	30.6% (19)
Biological resource use	20.9% (18)

Threat Category:	Entire Region	Aquatic Systems	Agricultural Lands	Barren Lands	Developed Lands	Forests	Grasslands	Wetlands
Agriculture and aquaculture	1st	1st	1st	1st -Tie	1st - Tie	1st	1st	1st
Invasives and other problematic species and genes	2nd	3rd	6th -Tie	1st -Tie	3rd	4th	2nd	2nd - Tie
Residential and commercial development	3rd	6th - Tie	3rd -Tie	8th - Tie	1st - Tie	2nd	3rd	4th
Energy production and mining	4th	2nd	6th -Tie	1st -Tie	5th - Tie	3rd	4th	5th
Human intrusion and disturbance	5th	5th	3rd - Tie	1st -Tie	4th	5th	6th -Tie	6th - Tie
Pollution	6th	4th	2nd	1st -Tie	7th	8th	9th	2nd - Tie
Natural systems modifications	7th	6th - Tie	3rd - Tie	1st -Tie	8th	6th	5th	6th - Tie
Transportation and service corridors	8th	9th	9th	8th - Tie	5th - Tie	7th	6th -Tie	9th
Climate change and severe weather	9th	8th	8th	8th - Tie	11th	11th	10th	8th
Other stressors	10th	10th	10th	1st -Tie	10th	9th	6th -Tie	10th
Biological resource use	11th	11th	11th	8th - Tie	9th	10th	11th	11th

Threat Category:	Entire Region	Aquatic Systems	Agricultural Lands	Barren Lands	Developed Lands	Forests	Grasslands	Wetlands
Agriculture and aquaculture	1st	1st	1st	1st -Tie	1st - Tie	1st	1st	1st
Invasives and other problematic species and genes	2nd	3rd	6th -Tie	1st -Tie	3rd	4th	2nd	2nd - Tie
Residential and commercial development	3rd	6th - Tie	3rd -Tie	8th - Tie	1st - Tie	2nd	3rd	4th
Energy production and mining	4th	2nd	6th -Tie	1st -Tie	5th - Tie	3rd	4th	5th
Human intrusion and disturbance	5th	5th	3rd - Tie	1st -Tie	4th	5th	6th -Tie	6th - Tie
Pollution	6th	4th	2nd	1st -Tie	7th	8th	9th	2nd - Tie
Natural systems modifications	7th	6th - Tie	3rd - Tie	1st -Tie	8th	6th	5th	6th - Tie
Transportation and service corridors	8th	9th	9th	8th - Tie	5th - Tie	7th	6th -Tie	9th
Climate change and severe weather	9th	8th	8th	8th - Tie	11th	11th	10th	8th
Other stressors	10th	10th	10th	1st -Tie	10th	9th	6th -Tie	10th
Biological resource use	11th	11th	11th	8th - Tie	9th	10th	11th	11th

>50% Respondents identified as significant or moderate

Threat Category:	Entire Region	Aquatic Systems	Agricultural Lands	Barren Lands	Developed Lands	Forests	Grasslands	Wetlands
Agriculture and aquaculture	1st	1st	1st	1st -Tie	1st - Tie	1st	1st	1st
Invasives and other problematic species and genes	2nd	3rd	6th -Tie	1st -Tie	3rd	4th	2nd	2nd - Tie
Residential and commercial development	3rd	6th - Tie	3rd -Tie	8th - Tie	1st - Tie	2nd	3rd	4th
Energy production and mining	4th	2nd	6th -Tie	1st -Tie	5th - Tie	3rd	4th	5th
Human intrusion and disturbance	5th	5th	3rd - Tie	1st -Tie	4th	5th	6th -Tie	6th - Tie
Pollution	6th	4th	2nd	1st -Tie	7th	8th	9th	2nd - Tie
Natural systems modifications	7th	6th - Tie	3rd - Tie	1st -Tie	8th	6th	5th	6th - Tie
Transportation and service corridors	8th	9th	9th	8th - Tie	5th - Tie	7th	6th -Tie	9th
Climate change and severe weather	9th	8th	8th	8th - Tie	11th	11th	10th	8th
Other stressors	10th	10th	10th	1st -Tie	10th	9th	6th -Tie	10th
Biological resource use	11th	11th	11th	8th - Tie	9th	10th	11th	11th

>50% Respondents identified as significant or moderate

Threat Category:	Entire Region	Aquatic Systems	Agricultural Lands	Barren Lands	Developed Lands	Forests	Grasslands	Wetlands
Agriculture and aquaculture	1st	1st	1st	1st -Tie	1st - Tie	1st	1st	1st
Invasives and other problematic species and genes	2nd	3rd	6th -Tie	1st -Tie	3rd	4th	2nd	2nd - Tie
Residential and commercial development	3rd	6th - Tie	3rd -Tie	8th - Tie	1st - Tie	2nd	3rd	4th
Energy production and mining	4th	2nd	6th -Tie	1st -Tie	5th - Tie	3rd	4th	5th
Human intrusion and disturbance	5th	5th	3rd - Tie	1st -Tie	4th	5th	6th -Tie	6th - Tie
Pollution	6th	4th	2nd	1st -Tie	7th	8th	9th	2nd - Tie
Natural systems modifications	7th	6th - Tie	3rd - Tie	1st -Tie	8th	6th	5th	6th - Tie
Transportation and service corridors	8th	9th	9th	8th - Tie	5th - Tie	7th	6th -Tie	9th
Climate change and severe weather	9th	8th	8th	8th - Tie	11th	11th	10th	8th
Other stressors	10th	10th	10th	1st -Tie	10th	9th	6th -Tie	10th
Biological resource use	11th	11th	11th	8th - Tie	9th	10th	11th	11th

Highest Ranked Threats

Threat Category:	Entire Region	Aquatic Systems	Agricultural Lands	Barren Lands	Developed Lands	Forests	Grasslands	Wetlands
Agriculture and aquaculture	1st	1st	1st	1st -Tie	1st - Tie	1st	1st	1st
Invasives and other problematic species and genes	2nd	3rd	6th -Tie	1st -Tie	3rd	4th	2nd	2nd - Tie
Residential and commercial development	3rd	6th - Tie	3rd -Tie	8th - Tie	1st - Tie	2nd	3rd	4th
Energy production and mining	4th	2nd	6th -Tie	1st -Tie	5th - Tie	3rd	4th	5th
Human intrusion and disturbance	5th	5th	3rd - Tie	1st -Tie	4th	5th	6th -Tie	6th - Tie
Pollution	6th	4th	2nd	1st -Tie	7th	8th	9th	2nd - Tie
Natural systems modifications	7th	6th - Tie	3rd - Tie	1st -Tie	8th	6th	5th	6th - Tie
Transportation and service corridors	8th	9th	9th	8th - Tie	5th - Tie	7th	6th -Tie	9th
Climate change and severe weather	9th	8th	8th	8th - Tie	11th	11th	10th	8th
Other stressors	10th	10th	10th	1st -Tie	10th	9th	6th -Tie	10th
Biological resource use	11th	11th	11th	8th - Tie	9th	10th	11th	11th

Lowest Ranked Threats

15. You indicated a number of general categories as significant or moderate threats to fish and wildlife habitats within **HABITAT** in the Valleys and Hills (Region 4). Please indicate which of the following are specific threats to fish and wildlife habitats within HABITAT in the Valleys and Hills (Region 4).

Agriculture and Aquaculture – 1st
Threats from farming and ranching as a result of agricultural expansion and intensification, including silviculture, mariculture, and aquaculture

Specific Threat:	Rating as significant or moderate:	N:	Trend:
Annual and perennial nontimber crops	86.6%	71	Increase
Wood and pulp plantations	17.9%	12	Remain the same
Livestock farming and ranching	49.4%	39	Remain the same
Aquaculture	8.9%	5	Remain the same
Conversion of habitat to annual crops	93.8%	76	Increase

Invasives and Other Problematic Species/Genes – 2nd

Threats from non-native and native plants, animals, pathogens/microbes, or genetic materials that have or are predicted to have harmful effects on biodiversity following their introduction, spread, and/or increase in abundance

Specific Threat:	Rating as significant or moderate:	N:	Trend:
Invasive/alien species	100.0%	67	Increase
Problematic native species (e.g. overabundant native deer or algae)	59.1%	39	Remain the same
Plant diseases	44.6%	25	Remain the same
Introduced genetic material (such as crop, seed stock, biocontrol, stocked/released species, etc.)	42.0%	21	Remain the same

Residential and Commercial Development – 3rd
Threats from human settlements or other nonagricultural land uses with a substantial footprint

Specific Threat:	Rating as significant or moderate:	N:	Trend:
Housing and urban areas	96.8%	60	Increase
Commercial and industrial areas	88.1%	52	Increase
Tourism and recreation areas (e.g., sites with a substantial footprint – golf courses, campgrounds, etc.)	40.0%	24	Remain the Same

Energy Production and Mining – 4th
Threats from production of nonbiological resources

Specific Threat:	Rating as significant or moderate:	N:	Trend:
Oil and gas drilling	63.2%	36	Increase
Mining and quarrying	93.2%	55	Increase
Renewable energy production	18.4%	9	Remain the same
Fossil fuel energy production	80.0%	44	Remain the same
Shale gas development (e.g., fracking)	60.4%	29	Increase

Human Intrusion and Disturbance – 5th

Threats from human activities that alter, destroy, and disturb habitats and species associated with nonconsumptive uses of biological resources.

Specific Threat:	Rating as significant or moderate:	N:	Trend:
Recreation activities (e.g., ATVs, trail use, horseback riding, high-speed boating, canoeing)	45.1%	23	Increase

Pollution– 6th
Threats from introduction of exotic and/or excess materials or energy from point and nonpoint

Specific Threat:	Rating as significant or moderate:	N:	Trend
Runoff from roads/service corridors	69.8%	37	Remain the same
Chemical spills	54.9%	28	Remain the same
Point source pollution from commercial/industrial sources	72.5%	37	Remain the same
Air pollution (e.g., smoke, mercury emissions)	64.0%	32	Remain the same
Household sewage and urban water waste	67.3%	35	Remain the same
Agriculture, residential, and forestry effluents	88.0%	44	Increase
Garbage and solid waste	38.0%	19	Remain the same
Excess energy (e.g., noise/light pollution, warm water discharge, etc.)	38.8%	19	Tie - Increase/Remain the same

Natural Systems Modification – 7th
Threats from human activities that alter, destroy, and disturb habitats and species associated with nonconsumptive uses of biological resources

Specific Threat:	Rating as significant or moderate:	N:	Trend
Dams and water management/use	39.1%	18	Remain the same
Fire and fire suppression	32.0%	16	Remain the same
Log jam removal	20.5%	9	Remain the same
Over-mowing of natural areas	31.3%	15	Remain the same
Conversion of natural habitats to other land uses	92.0%	46	Increase

Transportation and Service Corridors – 8th
Threats from long, narrow transport corridors and the vehicles that use them, including associated wildlife mortality

Specific Threat:	Rating as significant or moderate:	N:	Trend
Roads and railroads	79.4%	27	Increase
Utility and service lines	45.7%	16	Remain the same
Flight paths	3.4%	1	Remain the same
Shipping lanes	23.3%	7	Remain the same

Climate Change and Severe Weather – 9th

Long-term climactic changes that may be linked to global warming and other severe climactic or weather events outside the natural range of variation that could wipe out vulnerable species or habitat.

Specific Threat:	Rating as significant or moderate:	N:	Trend
Changing frequency, duration, and intensity of drought	85.2%	23	Increase
Changing frequency, duration, and intensity of floods	96.3%	26	Increase
Shifting and alteration of habitats due to climate change	77.8%	21	Increase
Temperature extremes	73.1%	19	Increase
Shifting seasons/phenology	70.8%	17	Increase

Other Stressors – 10th

Additional threats and stressors directly affecting habitats, such as diseases and genetic diversity issues

Specific Threat:	Rating as significant or moderate:	N:	Trend
Low genetic diversity (due to reduced population size, species inbreeding, etc.)	82.4%	14	Increase
Diseases	85.7%	12	Increase

Biological Resource Use – 11th
Threats from consumptive use of "wild" biological resources including deliberate and unintentional harvesting effects; also persecution or control of specific species

Specific Threat:	Rating as significant or moderate:	N:	Trend
Forestry practices (e.g., silvicultural methods leading to the lack of early successional habitat)	58.8%	10	Tie - Increase/Remain the same

Conservation Actions for Habitats in Valleys and Hills (Region 4)

17. Please indicate the importance of the following general categories of conservation actions for fish and wildlife habitats within **HABITAT** in the Valleys and Hills (Region 4) over the next 10 years,

Threat Category:	Rating as "significant" or "moderate" threat:	
Land/water/species management	91.7%	(77)
Land/water protection	87.2%	(75)
Education and awareness	77.3%	(68)
Livelihood, economic, and other incentives	72.3%	(60)
Law and policy	68.3%	(56)
External capacity building	66.7%	(54)

Threat Category:	Entire Region	Aquatic Systems	Agricultural Lands	Barren Lands	Developed Lands	Forests	Grasslands	Wetlands
Land/water/species management	1st	3rd -Tie	1st	1st - Tie	4th -Tie	1st	1st	1st
Land/water protection	2nd	1st - Tie	4th -Tie	1st - Tie	1st - Tie	2nd	2nd	2nd
Education and awareness	3rd	6th	4th -Tie	1st - Tie	1st - Tie	3rd	3rd	5th
Livelihood, economic, and other incentives	4th	3rd -Tie	2nd	1st - Tie	1st - Tie	4th	4th	6th
Law and policy	5th	1st - Tie	6th	5th - Tie	6th	5th	5th	3rd -Tie
External capacity building	6th	3rd -Tie	3rd	5th - Tie	4th -Tie	6th	6th	3rd -Tie

Threat Category:	Entire Region	Aquatic Systems	Agricultural Lands	Barren Lands	Developed Lands	Forests	Grasslands	Wetlands
Land/water/species management	1st	3rd -Tie	1st	1st - Tie	4th -Tie	1st	1st	1st
Land/water protection	2nd	1st - Tie	4th -Tie	1st - Tie	1st - Tie	2nd	2nd	2nd
Education and awareness	3rd	6th	4th -Tie	1st - Tie	1st - Tie	3rd	3rd	5th
Livelihood, economic, and other incentives	4th	3rd -Tie	2nd	1st - Tie	1st - Tie	4th	4th	6th
Law and policy	5th	1st - Tie	6th	5th - Tie	6th	5th	5th	3rd -Tie
External capacity building	6th	3rd -Tie	3rd	5th - Tie	4th -Tie	6th	6th	3rd -Tie

Highest Ranked Actions

Threat Category:	Entire Region	Aquatic Systems	Agricultural Lands	Barren Lands	Developed Lands	Forests	Grasslands	Wetlands
Land/water/species management	1st	3rd -Tie	1st	1st - Tie	4th -Tie	1st	1st	1st
Land/water protection	2nd	1st - Tie	4th -Tie	1st - Tie	1st - Tie	2nd	2nd	2nd
Education and awareness	3rd	6th	4th -Tie	1st - Tie	1st - Tie	3rd	3rd	5th
Livelihood, economic, and other incentives	4th	3rd -Tie	2nd	1st - Tie	1st - Tie	4th	4th	6th
Law and policy	5th	1st - Tie	6th	5th - Tie	6th	5th	5th	3rd -Tie
External capacity building	6th	3rd -Tie	3rd	5th - Tie	4th -Tie	6th	6th	3rd -Tie

Lowest Ranked Actions

18. Please indicate the importance of the following specific conservation actions within these general categories for fish and wildlife habitats within HABITAT in the Valleys and Hills (Region 4).

Land/Water/Species Management – 1st
Actions directed at conserving or restoring sites, habitats, and the wider environment as well as actions

Specific Threat		N:
Reduce stream bank erosion	100.0%	13
Promote diversity of HABITAT types and successional stages	95.7%	44
Restore habitats and natural systems in HABITAT	94.8%	73
Promote diversity of forest types and successional stages	93.3%	14
Promote diversity of grassland types and successional stages	93.3%	14
Link existing habitat blocks through corridor enhancement in HABITAT	92.2%	71
Reduce losses of fish and wildlife habitats (due to agriculture, urban sprawl, commercial development, etc.)	92.2%	71
Develop and promote farming technologies and practices that have conservation benefits (e.g., cover crops, no till)	85.7%	66
Mine reclamation	85.5%	53
Increase acres of riparian buffers	84.7%	61
Protect adjacent buffer zones	83.3%	25
Reduce stream head cutting	83.3%	10
Reestablish natural disturbance regimes in HABITAT	80.4%	37
Increase acres enrolled in the Classified Forest and Wildlands Program	80.0%	60
Protect natural water regimes (e.g., withdraws, warm-water discharge)	79.3%	23
Control invasive species in HABITAT	75.0%	57
Decrease number of combined sewer overflow events	75.0%	21
Protect and enhance undeveloped shorelines	71.4%	20
Reduce nutrient and toxin loads (e.g., heavy metals, pharmaceuticals, fertilizers, insecticides)	68.4%	52
Manage urban woodlots	66.7%	2
Improve drainage management	62.5%	45
Improve integrated pest management	58.3%	7
Control problematic native species in HABITAT	52.8%	38
Species reintroduction.	52.4%	11
Decrease E. coli counts	51.9%	14
Manage biofuel grasslands	45.0%	9
Dam removal	37.0%	10
Reduce recreational overuse of HABITAT	31.0%	18
Remove log jams	23.1%	3
Ex situ conservation (protection of a species outside of its natural habitat).	15.2%	7

Land/Water/Species Management – Aquatic Systems

Specific Threat		N:
Develop and promote farming technologies and practices that have conservation benefits (e.g., cover crops, no till)	100.0%	13
Increase acres of riparian buffers	100.0%	13
Link existing habitat blocks through corridor enhancement in aquatic systems	100.0%	13
Reduce nutrient and toxin loads (e.g., heavy metals, pharmaceuticals, fertilizers, insecticides)	100.0%	13
Reduce stream bank erosion	100.0%	13
Control invasive species in aquatic systems (e.g., Asian carp, zebra mussels, invasive aquatic plants)	92.3%	12
Improve drainage management	92.3%	12
Mine reclamation	92.3%	12
Reduce losses of fish and wildlife habitats (due to agriculture, urban sprawl, commercial development, etc.)	92.3%	12
Restore habitats and natural systems in aquatic systems	84.6%	11
Increase acres enrolled in the Classified Forest and Wildlands Program	83.3%	10
Reduce stream head cutting	83.3%	10
Decrease number of combined sewer overflow events	76.9%	10
Protect natural water regimes (e.g., withdraws, warm-water discharge)	76.9%	10
Protect adjacent buffer zones	75.0%	9
Protect and enhance undeveloped shorelines	66.7%	8
Decrease E. coli counts	58.3%	7
Reduce recreational overuse of aquatic systems	46.2%	6
Species reintroduction. Please specify:	40.0%	2
Control problematic native species in aquatic systems	38.5%	5
Ex situ conservation (protection of a species outside of its natural habitat). Please specify:	37.5%	3
Remove log jams	23.1%	3
Dam removal	16.7%	2

Specific Threat	N:
Develop and promote farming technologies and practices that have conservation benefits (e.g., cover crops, no till)	100.0% 12
Increase acres of riparian buffers	100.0% 12
Link existing habitat blocks through corridor enhancement in agricultural lands	100.0% 12
Reduce losses of fish and wildlife habitats (due to agriculture, urban sprawl, commercial development, etc.)	100.0% 12
Restore and integrate diversity of habitats into crop-production dominated landscapes	91.7% 11
Increase acres enrolled in the Classified Forest and Wildlands Program	83.3% 10
Reduce nutrient and toxin loads (e.g., heavy metals, pharmaceuticals, fertilizers, insecticides)	83.3% 10
Improve drainage management	72.7% 8
Control problematic species (e.g., deer, raccoon, geese, domestic cat, feral hog) in agricultural lands	58.3% 7
Improve integrated pest management	58.3% 7
Control invasive species in agricultural lands	50.0% 6
Manage biofuel grasslands	30.0% 3
Ex situ conservation (protection of a species outside of its natural habitat). Please specify:	28.6% 2
Species reintroduction. Please specify:	25.0% 1
Develop and promote farming technologies and practices that have conservation benefits (e.g., cover crops, no till)	100.0% 12

Land/Water/Species Management – Barren Lands

Specific Threat		N:
Increase acres enrolled in the Classified Forest and Wildlands Program	100.0%	2
Link existing habitat blocks through corridor enhancement in barren lands	100.0%	2
Mine reclamation	100.0%	2
Protect adjacent buffer zones	100.0%	2
Reduce nutrient and toxin loads (e.g., heavy metals, pharmaceuticals, fertilizers, insecticides)	100.0%	2
Reestablish natural disturbance regimes in barren lands	100.0%	1
Restore habitats and natural systems in barren lands	100.0%	2
Control invasive species in barren lands	50.0%	1
Control problematic species (e.g., deer, raccoon, skunk, coyote, domestic cat, feral hog) in barren lands	50.0%	1
Develop and promote farming technologies and practices that have conservation benefits (e.g., cover crops, no till)	50.0%	1
Improve drainage management	50.0%	1
Increase acres of riparian buffers	50.0%	1
Reduce losses of fish and wildlife habitats (due to agriculture, urban sprawl, commercial development, etc.)	50.0%	1
Species reintroduction. Please specify:	50.0%	1
Ex Situ Conservation	0.0%	0

Specific Threat	N:	
Control invasive species in developed lands	100.0%	3
Improve drainage management	100.0%	2
Increase acres of riparian buffers	100.0%	3
Reduce losses of fish and wildlife habitats (due to agriculture, urban sprawl, commercial development, etc.)	100.0%	3
Control problematic species (e.g., deer, raccoon, geese, domestic cat, feral hog, exotic/aggressive vegetation) in developed lands	66.7%	2
Develop and promote farming technologies and practices that have conservation benefits (e.g., cover crops, no till)	66.7%	2
Increase acres enrolled in the Classified Forest and Wildlands Program	66.7%	2
Link existing habitat blocks through corridor enhancement in developed lands	66.7%	2
Manage urban woodlots	66.7%	2
Mine reclamation	66.7%	2
Restore and integrate diversity of habitats into developed landscapes	66.7%	2
Reduce nutrient and toxin loads (e.g., heavy metals, pharmaceuticals, fertilizers, insecticides)	33.3%	1
Species reintroduction. Please specify:	0.0%	0
Ex situ conservation (protection of a species outside of its natural habitat). Please specify:	0.0%	0

Specific Threat	N:
Reduce losses of fish and wildlife habitats (due to agriculture, urban sprawl, commercial development, etc.)	100.0% 16
Restore habitats and natural systems in forests	100.0% 16
Promote diversity of forest types and successional stages	93.3% 14
Increase acres enrolled in the Classified Forest and Wildlands Program	87.5% 14
Reestablish natural disturbance regimes in forests	86.7% 13
Control invasive species in forests	81.3% 13
Link existing habitat blocks through corridor enhancement in forests	81.3% 13
Increase acres of riparian buffers	76.9% 10
Control problematic species (e.g., deer, raccoon, domestic cat, feral hog) in forests	66.7% 10
Mine reclamation	66.7% 10
Develop and promote farming technologies and practices that have conservation benefits (e.g., cover crops, no till)	56.3% 9
Reduce nutrient and toxin loads (e.g., heavy metals, pharmaceuticals, fertilizers, insecticides)	56.3% 9
Species reintroduction. Please specify:	50.0% 1
Improve drainage management	30.8% 4
Reduce recreational overuse of forests	25.0% 4
Ex situ conservation (protection of a species outside of its natural habitat). Please specify:	0.0% 0

Specific Threat	N:
Mine reclamation	100.0% 15
Restore habitats and natural systems in grasslands	100.0% 15
Species reintroduction. Please specify:	100.0% 3
Promote diversity of grassland types and successional stages	93.3% 14
Reestablish natural disturbance regimes in grasslands	92.9% 13
Develop and promote farming technologies and practices that have conservation benefits (e.g., cover crops, no till)	86.7% 13
Link existing habitat blocks through corridor enhancement in grasslands	86.7% 13
Reduce losses of fish and wildlife habitats (due to agriculture, urban sprawl, commercial development, etc.)	80.0% 12
Increase acres enrolled in the Classified Forest and Wildlands Program	66.7% 10
Control invasive species in grasslands	64.3% 9
Manage biofuel grasslands	60.0% 6
Increase acres of riparian buffers	57.1% 8
Improve drainage management	33.3% 5
Reduce nutrient and toxin loads (e.g., heavy metals, pharmaceuticals, fertilizers, insecticides)	33.3% 5
Control problematic species (e.g., raccoon, skunk, coyote, domestic cat) in grasslands	30.8% 4
Reduce recreational overuse of grasslands	21.4% 3
Ex situ conservation (protection of a species outside of its natural habitat). Please specify:	12.5% 1

Specific Threat		N:
Develop and promote farming technologies and practices that have conservation benefits (e.g., cover crops, no till)	100.0%	16
Link existing habitat blocks through corridor enhancement in wetlands	100.0%	16
Promote diversity of wetland types and successional stages	100.0%	16
Restore habitats and natural systems in wetlands	100.0%	16
Reduce losses of fish and wildlife habitats (due to agriculture, urban sprawl, commercial development, etc.)	93.8%	15
Increase acres of riparian buffers	93.3%	14
Protect adjacent buffer zones	87.5%	14
Mine reclamation	85.7%	12
Control invasive species in wetlands	81.3%	13
Improve drainage management	81.3%	13
Protect natural water regimes (e.g., withdraws, warm-water discharge)	81.3%	13
Increase acres enrolled in the Classified Forest and Wildlands Program	80.0%	12
Reduce nutrient and toxin loads (e.g., heavy metals, pharmaceuticals, fertilizers, insecticides)	80.0%	12
Protect and enhance undeveloped shorelines	75.0%	12
Decrease number of combined sewer overflow events	73.3%	11
Reestablish natural disturbance regimes in wetlands	62.5%	10
Species reintroduction. Please specify:	60.0%	3
Control problematic species (e.g., deer, raccoon, domestic cat, feral hog, exotic/aggressive vegetation) in wetlands	56.3%	9
Dam removal	53.3%	8
Decrease E. coli counts	46.7%	7
Reduce recreational overuse of wetlands	31.3%	5
Ex situ conservation (protection of a species outside of its natural habitat). Please specify:	9.1%	1

18. Please indicate the importance of the following specific conservation actions within these general categories for fish and wildlife habitats within HABITAT in the Valleys and Hills (Region 4).

Land/Water Protection:	N:
Preserve currently existing corridors	97.3% (73)
Acquire conservation easements to protect important wildlife habitats	96.0% (72)
Acquire currently unprotected **HABITAT***	93.5% (58)
Reduce conversion to cropland	93.3% (70)
Build/strengthen CRP partnerships	85.3% (64)

***Aggregated multiple habitat-specific options

18. Please indicate the importance of the following specific conservation actions within these general categories for fish and wildlife habitats within HABITAT in the Valleys and Hills (Region 4).

Education and Awareness:	N:
Educational programs specifically for K-12	92.6% (63)
Training programs for stakeholders	91.2% (62)
Educational programs in general	91.0% (61)
Improvement of signage and other communication materials in conservation areas	53.7% (36)

18. Please indicate the importance of the following specific conservation actions within these general categories for fish and wildlife habitats within HABITAT in the Valleys and Hills (Region 4).

Livelihood, economic, and other incentives:	N:
Promote conservation payment programs (e.g., payment for ecosystem services, conservation easements)	91.7% (55)
Manage recreational opportunities to be compatible with fish and wildlife habitats	75.0% (45)
Promote market forces (e.g., creation of a nitrogen trading market, promotion of alternative agricultural markets) as a tool for conservation	71.7% (38)
Promote nonmonetary values of natural systems within the state	71.2% (42)
Support substitution of alternatives for environmentally harmful products and processes	62.1% (36)
Link natural resources to livelihoods through nature tourism	54.2% (32)

18. Please indicate the importance of the following specific conservation actions within these general categories for fish and wildlife habitats within HABITAT in the Valleys and Hills (Region 4).

Law and Policy:	N:
Improve compliance with and enforcement of current policies	84.9% (45)
Reduce urban sprawl through planning and zoning	72.2% (39)
Increase regulations on invasive species	70.9% (39)
Set private sector standards and codes	59.6% (28)
Change current laws, policies, and regulations.	52.8% (19)

18. Please indicate the importance of the following specific conservation actions within these general categories for fish and wildlife habitats within HABITAT in the Valleys and Hills (Region 4).

External Capacity Building:	N:
Develop alliances and partnerships (e.g., between producers, landowners, and conservation professionals)	100.0% (54)
Promote use of research and science in conservation decision-making processes	96.3% (52)
Strengthen conservation financing	90.6% (48)
Increase state's capacity for research and monitoring of conservation actions	88.9% (48)
Promote green infrastructure	79.2% (42)
Develop institutions and civil society	61.0% (25)